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10/721,968	11/24/2003	James L. Ferguson	VEIAP103USC	6978

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EXAMINER
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LESPERANCE, JEAN E

ART UNIT	PAPER NUMBER
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2629

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07/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/721,968	<b>Applicant(s)</b> FERGASON, JAMES L.	
	<b>Examiner</b> Jean E. Lesperance	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21, 24 and 28-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21, 24 and 28-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>See Continuation Sheet</u> | 6) <input type="checkbox"/> Other: _____  |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :2/18/04, 9/21/04, 10/21/05, 7/13/06, 1/4/07, 3/16/07, 5/9/07.

### DETAILED ACTION

1. The election of restriction filed July 10, 2007 is entered and claims 1-21, 24, and 28-39 are pending.

#### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 29-31, 33, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-074027 by Ueno et al.

Regarding claims 1, 30, and 33, Ueno et al. teach a stereoscopic image display device that two images on the left and right from image display surfaces having two rays of polarized light are synthesized using a half mirror to project them and that the image is -seen through polarized glasses having different polarizing directions (at right angle to each other) on the left and right eye, characterized in that a pair of liquid crystal display panels (LCDs) in which display light seen from the front surface possesses the same polarized waves diagonally right down at 45° or diagonally left down at 45° is made to access parallel to the lower part of the display surfaces (common access); by perpendicularly providing the display surfaces, the half mirror is provided so as to be 45° to both display surfaces (page 1, lines 1-4 and see Figs.1 and 2). Having an obtuse

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angle to each other between the displays is a design choice. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to adjust the angle between two displays to allow the inventor to get the design that he/she chooses.

Regarding claim 2, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be  $45^\circ$  to both display surfaces. The displays are at an angle of 180 degrees relative to each other is considered as an inventor's choice.

Regarding claim 3, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be  $45^\circ$  to both display surfaces. The displays are at an angle greater than 90 degrees to about 170 degrees relative to each other is considered as an inventor's choice.

Regarding claim 4, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be  $45^\circ$  to both display surfaces. The displays are at an angle of from about 110 degrees to about 140 degrees relative to each other is considered as an inventor's choice.

Regarding claim 5, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be  $45^\circ$  to both display surfaces. The displays are at an angle of approximately 120 degrees relative to each other is considered as an inventor's choice.

Regarding claims 6 and 31, Ueno et al. teach since the liquid crystal panels used for the Polaroid stereoscopic TV set are originally a thin flat type (see page 5, lines 14-

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15).

Regarding claims 7 and 29, Ueno et al. teach two images on the left and right from image display surface having two rays of polarized light are synthesized using a half mirror (page 1, lines 2-4) and Figure 4 illustrates polarized glasses 8 for viewing a right and left eye viewing (page 5, lines 5-6).

Regarding claim 34, Ueno et al. teach since the liquid crystal panels used for the Polaroid stereoscopic TV set are originally a thin flat type (see page 5, lines 14-15) wherein the liquid crystal panel which is a thin flat type inherently has a size and shape capable of providing a directly viewed image.

3. Claims 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent Publication No. 63-074027 by Ueno et al. in view of USPN 6,449,090 ("Omar").

Regarding claim 8, Ueno et al. fail the polarization is modified by adding quarter wave plates, respectively, to the light paths from the LCDs so that the images from the respective displays as viewed via the beam splitter are separated by right and left circular polarized light.

However, Omar teaches the use of circular polarization and the use of a quarter wave plate for creating circular polarization: When the observer tilts his head, the respective filters are no longer substantially perpendicular to the light coming from the panels. Also, because the direction of polarization of the left polarizer is no longer substantially parallel to the polarization of light from the panel 5 and similarly for the

right polarizer and the panel 8, the left and right views are somewhat attenuated. Thus, the left view becomes at least partially visible to the right eye, the right view becomes at least partially visible to the left eye, and the 3\_DD effect is reduced or eliminated." col. 6, ll. 30-39.

Omar further teaches: "In order to avoid this disadvantage, circularly polarized light may be used instead Of linearly polarized light. FIG. 10 shows a display of the type shown in FIGS. 7 and 8 further comprising \_quarter wave plates 28 and 29 disposed between the beam combiner 9 and the LCD panels 8 and 5, respectively. The quarter wave plates 28 and 29 convert the linearly polarized light from the panels 8 and 5 to circularly polarized light of opposite handedness. Similarly, the analyzer glasses 30 comprise quarter wave plates 32 and linear polarizer 31. The polarizer 31 and the quarter wave plate 32 for the left eye are arranged to pass light from the LCD panel 5 and the quarter wave plate 29 while substantially blocking light from the panel 8 and the quarter wave plate 28. Similarly, the quarter wave plate 32 and the polarizer 31 for the right eye are arranged to pass light from the panel 8 and the quarter wave plate 28 while substantially blocking light from the panel 5 and the quarter wave plate 29. Because the light from the display is circularly polarized in opposite directions for the left and right views, tilting of the head of the observer does not result in any change in cross-talk between the left and right views." col. 6, ll.40-60.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of JP-027 with the circular polarization taught by Omar in order to avoid attenuation and avoid partial visibility of

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the image from one eye as viewed by the other eye. One of ordinary skill in the art would be further motivated to modify the system of JP-027 with the circular polarization taught by Omar to reduce cross talk caused by the tilting of the head of the observer. Omar col. 6, l1.61-64.

Regarding claim 9, Omar teaches In order to avoid this disadvantage, circularly polarized light may be used instead Of linearly polarized light. FIG. 10 shows a display of the type shown in FIGS. 7 and 8 further comprising \_quarter wave plates 28 and 29 disposed between the beam combiner 9 and the LCD panels 8 and 5, respectively. The quarter wave plates 28 and 29 convert the linearly polarized light from the panels 8 and 5 to circularly polarized light of opposite handedness. Similarly, the analyzer glasses 30 comprise quarter wave plates 32 and linear polarizer 31. The polarizer 31 and the quarter wave plate 32 for the left eye are arranged to pass light from the LCD panel 5 and the quarter wave plate 29 while substantially blocking light from the panel 8 and the quarter wave plate 28. Similarly, the quarter wave plate 32 and the polarizer 31 for the right eye are arranged to pass light from the panel 8 and the quarter wave plate 28 while substantially blocking light from the panel 5 and the quarter wave plate 29. Because the light from the display is circularly polarized in opposite directions for the left and right views, tilting of the head of the observer does not result in any change in cross-talk between the left and right views." col. 6, l1.40-60. Same motivation as in claim 8.

Regarding claim 10, Omar teaches the quarter wave plate 32 and the polarizer 31 for the right eye are arranged to pass light from the panel 8 and the quarter wave



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plate 28 while substantially blocking light from the panel 5 and the quarter wave plate 29. Because the light from the display is circularly polarized in opposite directions for the left and right views, tilting of the head of the observer does not result in any change in cross-talk between the left and right views." col. 6, l1.40-60. Same motivation as in claim 8.

Regarding claim 11, Omar inherently teaches that the lights from both displays have the same circular polarization, i.e. both are left or right circularly polarized. Omar in col. 6, l1. 60 teaches: "The quarter wave plates 28 and 29 convert the linearly polarized light from the panels 8 and 5 to circularly polarized light of opposite handedness. Similarly, the analyzer glasses 30 comprise quarter wave plates 32 and linear polarisers 31. The polarizer 31 and the quarter wave plate 32 for the left eye are arranged to pass light from the LCD panel 5 and the quarter wave plate 29 while substantially blocking light from the panel 8 and the quarter wave plate 28. Similarly, the quarter wave plate 32 and the polarizer 31 for the right eye are arranged to pass light from the panel 8 and the quarter wave plate 28 while substantially blocking light from the panel 5 and the quarter wave plate 29. Because the light from the display is circularly polarized in opposite directions for the left and right views, tilting of the head of the observer does not result in any change in cross-talk between the left and right views." Same motivation as in claim 8.

Regarding claim 12, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be 45° to both display surfaces. The displays are at an angle of 180 degrees relative to each other is considered as an

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inventor's choice. Same motivation as in claim 8.

Regarding claim 13, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be 45° to both display surfaces. The displays are at an angle greater than 90 degrees to about 170 degrees relative to each other is considered as an inventor's choice. Same motivation as in claim 8.

Regarding claim 14, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be 45° to both display surfaces. The displays are at an angle of from about 110 degrees to about 140 degrees relative to each other is considered as an inventor's choice. Same motivation as in claim 8.

Regarding claim 15, Ueno et al. teach by perpendicularly providing the display surfaces, the half mirror is provided so as to be 45° to both display surfaces. The displays are at an angle of approximately 120 degrees relative to each other is considered as an inventor's choice. Same motivation as in claim 8.

4. Claims 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 2,845,618 ("Huffman") in view of US Patent No. 6,400,394 ("Kim").

Regarding claim 18, Huffman teaches all the claimed limitations with the exception of providing the images are color images, each being composed of an assemblage of lines of different respective colors, and wherein the color image from one display is an arrangement in a one sequence and the color image from the other display is in an arrangement in the opposite sequence.

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However, Kim teaches a first diachronic mirror for separating the visible light into red (R), green (G), and blue (B) rays, a filter for making the separated R, G, B rays uniform, a first polarizing plate and a second polarizing plate arranged at both sides of the LCD panel to make use of the anisotropic light characteristics of the LCD panel, a second diachronic mirror for mixing the R, G, B rays received from the filter through the first polarizing plate (column 3, line 62 to column 4, line 5), (Means are disclosed as being provided in the remote camera unit for inverting one of the two images and then causing the two images to be projected mirror symmetrically onto the camera tube through the common lens system (column 1, lines 55-59), and (The 3D or spatially multiplexed image (SMI) is obtained by combining the left eye and right eye image frame data FL1 and FR1, as shown in FIG. 4. The left eye frame data FL1 is modified by a modulator MOD SO that the pixels are alternately selected to produce a modified left eye frame data FL2. Likewise, the right eye frame data FR1 is modified by a complementary modulator MOD so that the pixels are alternately selected to produce a modified right eye frame data FR2 complementary to the modified left eye frame data FL2. These two complementary frame data FL2 and FR2 are multiplexed by a multiplexer SMUX to produce a final image data frame FRD, with pixels of the left eye image being arranged alternately in a same line with pixels of the right eye image in a matrix form as illustrated in the final image data frame FRD in FIG. 4. Thus, putting on the polarizing glasses, the viewers can view the 3D image of the final image data frame FRD displayed on the screen 110. In this case, the left lens of the polarizing glasses is provided with a micro polarizer polarized in the horizontal direction to pass the left eye

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image light, and the right lens is provided with a micro polarizer polarized in the vertical direction, to pass the right eye image light (column 5, line 49 to column 6, line 3).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Huffman's system by implementing the signal processor system and alternate display method of Kim to enable the use of Red, Green, and Blue colors for processing the colored video data of the left eye and right eye image pixels of the 3D image signal and allow the alternate field to be displayed for a full frame (column 4, lines 19-27).

Regarding claim 21, Huffman teaches all the claimed limitations with the exception of providing inverting the image data for one of the images for presenting for viewing in substantially superposed relation to the other image.

However, Kim teaches means are disclosed as being provided in the remote camera unit for inverting one of the two images and then causing the two images to be projected mirror symmetrically onto the camera tube through the common lens system (column 1, lines 55-59).

Thus, it would have been obvious to a person of ordinary skill in the art to modify Huffman's system with the teachings of Kim to invert one of the images in the arrangement of Huffman in order to see the two images superimposed, i.e. one from the display that passes through the beam splitter and the other image from the second display and reflected by the beam splitter (column 1, lines 55-59).

***Claim Rejections - 35 USC § 102***

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5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16, 17, 19, 20 are rejected under 35 U.S.C. 102(b) as being unpatentable over US Patent No. 2,845,618 by Huffman.

Regarding claim 16, Huffman teaches a method of displaying stereo images (viewing devices for the presentation of stereoscopic television images (column 1, lines 15 and 16)), comprising simultaneously displaying a left image on a display and a right image on another display such that the left and right images have the optical polarization in the same direction (provide an improved stereoscopic television viewing device using light polarized filters and analyzers to separate the views of the left and right eyes or to separate images appearing on a same plane (column 1, lines 21-25)) , and using a beam splitter so positioned relative to the two displays that one can be viewed directly through the beam splitter and the other can be viewed by reflected light from the beam splitter combining those images in a common light path such that the optical polarization of the left image portion and the right image portion are different in such common light path such that the image portions can be separated based on optical polarization (a semi-transparent mirror 31 is located at an angle of substantially 45 degrees to the horizontal in position to bisect the 90 degrees angle between the planes of polarized sheets 27 and 28 (column 2, lines 16-20)).

Regarding claim 17, Huffman teaches discriminating the respective images in

the common light path using optical polarization (the method of discriminating the respective images in the common light path using optical polarization by stating: "it is well known that in a viewing device such as the one represented by reference character 23, light from one source of images (fluorescent screen 26) must reach the analyzer 24, polarized at an angle of 90 degrees with respect to light emitting from the other image source (screen 29) in order for the two sections of the analyzer 24 to separate the two images completely" (column 2, lines 33-38).

Regarding claim 19, Huffman teaches a method of presenting a stereoscopic image for viewing (viewing devices for the presentation of stereoscopic television images (column 1, lines 15 and 16)), comprising presenting a left eye image on a display, presenting a right eye image on another display that is at an angle relative to the first mentioned display, both said presenting steps presenting such images having optical polarization in the same direction (provide an improved stereoscopic television viewing device using light polarized filters and analyzers to separate the views of the left and right eyes or to separate images appearing on a same plane (column 1, lines 21-25)), and using a beam splitter that is so positioned relative to the two displays combining in a substantially common light path the respective images such that the respective images in the common light path have different optical polarization, whereby the images can be separated based on polarization so that one image can be viewed directly through the beam splitter by one eye and the other can be viewed by reflected light from the beam splitter by the other eye (a semi-transparent mirror 31 is located at an angle of substantially 45 degrees to the horizontal in position to bisect the 90

degrees angle between the planes of polarized sheets 27 and 28 (column 2, lines 16-20)).

Regarding claim 20, Huffman teaches discriminating between the left eye image and right eye image for viewing by respective left and right eyes the respective left and right eye images from the light in the common light path (provide an improved stereoscopic television viewing device using light polarized filters and analyzers to separate the views of the left and right eyes or to separate images appearing on a same plane (column 1, lines 21-25)).

6. Claims 24, 28, 32, and 35-39 are rejected under 35 U.S.C. 102(b) as being unpatentable over Japanese Patent Publication No. 63-074027 by Ueno et al.

Regarding claim 24, Ueno et al. teach a stereoscopic image display device that two images on the left and right from image display surfaces having two rays of polarized light are synthesized using a half mirror to project them and that the image is seen through polarized glasses having different polarizing directions (at right angle to each other) on the left and right eye, characterized in that a pair of liquid crystal display panels (LCDs) in which display light seen from the front surface possesses the same polarized waves diagonally right down at  $45^\circ$  or diagonally left down at  $45^\circ$  is made to access parallel to the lower part of the display surfaces (common access); by perpendicularly providing the display surfaces, the half mirror is provided so as to be  $45^\circ$  to both display surfaces (page 1, lines 1-4 and see Figs.1 and 2).

Regarding claim 32, Ueno et al. teach a stereoscopic image display device that two images on the left and right from image display surfaces having two rays of polarized light are synthesized using a half mirror to project them and that the image is seen through polarized glasses having different polarizing directions (at right angle to each other) on the left and right eye, characterized in that a pair of liquid crystal display panels (LCDs) in which display light seen from the front surface possesses the same polarized waves diagonally right down at  $45^\circ$  or diagonally left down at  $45^\circ$  is made to access parallel to the lower part of the display surfaces (common access); by perpendicularly providing the display surfaces, the half mirror is provided so as to be  $45^\circ$  to both display surfaces (page 1, lines 1-4 and see Figs.1 and 2).

Regarding claims 28, 35-37, they are rejected on the same ground as claim 24.

Regarding claim 38, Ueno et al. teach furthermore, as the invention is substantially by comprising inverting the image data for one of the Polaroid system when letter "A" is displayed, it images for presenting for viewing in substantially needs to be displayed in an erecting manner on superposed relation to the other image, surface a and an inverted manner on surface b, seeing the view point of Fig. 1 as a center.

Regarding claim 39, Ueno et al. teach furthermore, as the invention is substantially by comprising inverting the image data for one of the Polaroid system when letter "A" is displayed, it images for presenting for viewing in substantially needs to be displayed in an erecting manner on superposed relation to the other image,



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surface a and an inverted manner on surface b, seeing the view point of Fig. 1 as a center.

### **Conclusion**

7. Any inquiry concerning this communication or earlier communications from the ably examiner should be directed to Jean Lesperance whose telephone number is (571) 272-7692. The examiner can normally be reached on from Monday to Friday between 10:00AM and 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (571) 272-7691.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(571) 273-8300 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Jean Lesperance



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Date 7/17/2007

A handwritten signature in black ink, appearing to read 'R. Hjerpe', is positioned above the printed name.

**RICHARD HJERPE**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**